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TCEQ DOCKET NO. 2008-1888-UIC

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APPLICATION BY	§	BEFORE THE
	§	
URANIUM ENERGY CORP	§	
	§	TEXAS COMMISSION ON
FOR AQUIFER EXEMPTION	§	
	§	
DESIGNATION	§	ENVIRONMENTAL QUALITY

**AQUIFER EXEMPTION ORDER**

**The Texas Commission on Environmental Quality finds that:**

1. On August 9, 2008, Uranium Energy Corp (UEC) submitted an application for a Class III Injection Well Area Permit that includes a request for designation of an exempted aquifer.
2. UEC requests designation of a portion of the Goliad Formation from a depth of 45 to 404 feet, seen on the electric logs in cross sections in figure 6.8 through 6-13 in the Class III Well Area Permit application. The requested exemption extends over an area of approximately 423.8 acres in Goliad County, as illustrated in figure 1.3 in the Class III Well Area Permit application. A map depicting the extent of the exempted aquifer is attached.
3. The groundwater in the portion of the Goliad Formation described in Finding #2 contains an average of 568 mg/l total dissolved solids; therefore the aquifer would be considered an underground source of drinking water if it were not designated as an exempted aquifer.
4. UEC is an *in situ* uranium mining company and requests the designation of the exempted aquifer in conjunction with the use of the injection wells proposed to be permitted under TCEQ Permit No. UR03075 for injection of native groundwater fortified with oxygen or hydrogen peroxide, and bicarbonate ions. UEC cannot inject into the formation without the aquifer exemption.
5. An exempted aquifer is an aquifer or a portion of an aquifer which meets the criteria for fresh water but has been designated an exempted aquifer by the commission after notice and opportunity for hearing.
6. An aquifer or portion of an aquifer may be designated as an exempted aquifer if the following criteria are met:

- 
- 
- (1) It does not currently serve as a source of drinking water for human consumption;  
and
  - (2) Until exempt status is removed according to 30 TAC §331.13(f), it will not in the future serve as a source for human consumption because:
    - (A) It is mineral, hydrocarbon or geothermal energy bearing with production capability;
    - (B) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technically impractical;
    - (C) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or,
    - (D) It is located above a Class III well mining area subject to subsidence or catastrophic collapse.
- 
7. UEC has demonstrated that the portion of the Goliad Formation described in Finding #2 does not currently serve as a source of drinking water for human consumption by conducting a data search and a ground investigation that showed that there are no water wells that withdraw water used for human consumption from the Goliad Formation within the designated area.
  8. UEC has demonstrated that the portion of the Goliad Formation described in Finding #2 will not serve in the future as a source of drinking water for human consumption because it contains excessive amounts of radium-226 and uranium.
- 
9. UEC has demonstrated with analytical data from water samples and geophysical logs that the portion of the Goliad Formation described in Finding #2 is uranium-bearing with production capability.
  10. Notice of the aquifer exemption was issued on June 20, 2008 and June 25, 2008, published in *The Texan Express* and the *Victoria Advocate*, and mailed to the same recipients required for notice of an injection well permit application.
  11. The notice described the process for submitting comments and requesting a hearing on the aquifer exemption.
  12. The Executive Director of the Texas Commission on Environmental Quality provided a response to all timely, relevant and material, or significant public comments on the application.

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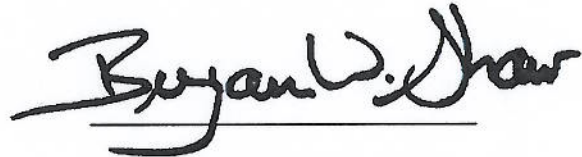
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Now, therefore, be it ordered by the Texas Commission on Environmental Quality that:

1. The portion of the Goliad Formation described in Finding #2 be designated as an exempted aquifer under 30 TAC § 331.13(c);
2. The Executive Director of the Texas Commission on Environmental Quality submit a program revision to the United States Environmental Protection Agency (EPA) under 40 CFR §§ 144.7, 146.4, and 145.32 to reflect this aquifer exemption designation for the Underground Injection Control program for the State of Texas; and
3. No designation of an exempted aquifer shall be final until approved by the EPA as part of the delegated Underground Injection Control Program.

Issue Date: **APR 29 2011**

Texas Commission on  
Environmental Quality

A handwritten signature in black ink, reading "Bryan W. Shaw". The signature is written in a cursive, flowing style. Below the signature is a horizontal line.

Bryan W. Shaw, Ph.D., Chairman

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This is a topographic map of a mountainous region. The map features contour lines indicating elevation, with labels such as 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000. A shaded area is located in the center-left, and a star is marked near the label 'Wieser'. A road is shown running diagonally from the top left to the bottom right. A north arrow is in the bottom right corner.

--- aquifer exemption boundary (423.8 acres)

The aquifer exemption applies to the Goliad Formation from a depth of 45 feet to 404 feet within the permit area in Goliad County.

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Attachment 1

UEC Goliad Project Milestones for Aquifer Exemption Request

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09/19/07	Notice published: Receipt and Intent to Obtain a New UIC Permit published in <i>Victoria Advocate</i> (Victoria County)
09/26/07	Notice published: Receipt and Intent to Obtain a New UIC Permit published in <i>Texan Express</i> (Goliad County)
01/24/08	Public Meeting on Class III UIC permit application and Aquifer Exemption request held in Goliad, Texas
06/17/08	Notice published: Application and Preliminary Decision published in <i>Victoria Advocate</i> (Victoria County)
06/20/08	Notice published: Application and Preliminary Decision published in <i>Texan Express</i> (Goliad County)
04/07/09	Notice of Hearing published in <i>Victoria Advocate</i> (Victoria County)
04/09/09	Notice of Hearing published in following newspapers: <i>Countywide</i> (Karnes County) <i>Texan Express</i> (Goliad County) <i>Cuero Record/Yorktown News View</i> (DeWitt County) <i>Beeville Bee Picayune</i> (Bee County) <i>Refugio County Press</i> (Refugio County)
05/03-11/11	Contested case hearing held in Austin (05/03-07/11) and in Goliad (05/10-11/11)
09/28/10	Proposal for Decision issued by Administrative Law Judge
12/14/10	TCEQ Commissioners vote to issue Class III UIC permit, Production Area Authorization no.1 and to approve Aquifer Exemption
02/26/11	TCEQ Commissioners vote to issue an order to issue Class III UIC permit, Production Area Authorization no.1 and to approve Aquifer Exemption
___/___/11	Aquifer Exemption Order Signed by Commissioners

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



## TEXAS COMMISSION ON ENVIRONMENTAL QUALITY ENDORSEMENT TO CLASS III UIC PRODUCTION AREA AUTHORIZATION NO. UR03075PAA1

ISSUED ON April 29, 2011

TO Uranium Energy Corp.

This endorsement is issued to correct and/or clarify production area authorization UR03075PAA1 as follows:

Page 1 of 12

### Section I. Permittee

Uranium Energy Corp Goliad Project (UEC)  
100 East Kleberg, Suite 210  
Kingsville, Texas 78363  
(361) 592-5400

is hereby corrected and clarified to read:

Uranium Energy Corp. Goliad Project (UEC)  
500 North Shoreline Blvd., Suite 800N  
Corpus Christi, Texas 78401

CONTINUED on Pages 2 through 3

This endorsement is part of the referenced UIC production area authorization UR03075PAA1 and should be attached thereto.

APPROVED, ISSUED AND EFFECTIVE in accordance with Title 30 Texas Administrative Code §50.45.

ISSUED and EFFECTIVE on: October 12, 2011

A handwritten signature in cursive script, reading "Mark Uiler", written over a horizontal line.  
For the Commission



Page 3 of 12

The following was added:

Section V. Incorporated Application Materials

This production area authorization is based on, and the permittee shall follow, the plans and specifications contained in the Class III Underground Injection Control dated August 26, 2008 (revised February 18, 2009, February 20, 2009, August 6, 2009, August 24, 2009, and November 3, 2009), which is hereby approved subject to the terms of this production area authorization and any other orders of the TCEQ:

<b>Production Area Action</b>	<b>Application, Revision or Issuance Date</b>	<b>Description of Change</b>
Endorsement	Application dated August 23, 2011	Change company name and mailing address.

These materials are incorporated into this production area authorization by reference as if fully set out herein. Any and all revisions to these elements shall become conditions of this production area authorization upon the date of approval by the Commission.

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
ENDORSEMENT TO CLASS III UIC PERMIT NO. UR03075

ISSUED ON April 29, 2011

TO Uranium Energy Corp.

This endorsement is issued to correct and/or clarify permit UR03075 as follows:

Page 1 of 14

Section I. Permittee

Uranium Energy Corp Goliad Project (UEC)  
100 East Kleberg, Suite 210  
Kingsville, Texas 78363  
(361) 592-5400

is hereby corrected and clarified to read:

Uranium Energy Corp. Goliad Project (UEC)  
500 North Shoreline Blvd., Suite 800N  
Corpus Christi, Texas 78401  
(361) 888-8235

CONTINUED on Pages 2 through 3

This endorsement is part of the referenced UIC permit UR03075 and should be attached thereto.

APPROVED, ISSUED AND EFFECTIVE in accordance with Title 30 Texas Administrative Code  
§50.45.

ISSUED and EFFECTIVE on: October 12, 2011

A handwritten signature in black ink, appearing to read "Mark U. Uecker", written over a horizontal line.  
For the Commission



Page 8 of 14

Section VIII.B. Additional Provisions

- G. Incorporated Application Materials. This permit is based on, and the permittee shall follow, the plans and specifications contained in the Class III Underground Injection Control Application dated July 27, 2007 (revised October 2, 2007, December 7, 2007, January 30, 2008, February 19, 2008, March 19, 2008, and April 3, 2008), which is hereby approved subject to the terms of this permit and any other orders of the TCEQ. These materials are incorporated into this permit by reference as if fully set out herein. Any and all revisions to these elements shall become conditions of this permit upon the date of approval by the commission.

is replaced with

- G. Incorporated Application Materials. This permit is based on, and the permittee shall follow, the plans and specifications contained in the Class III Underground Injection Control Application dated July 27, 2007 (revised October 2, 2007, December 7, 2007, January 30, 2008, February 19, 2008, March 19, 2008, and April 3, 2008, March 24, 2009, and November 3, 2009), and the following endorsement to the permit, which is hereby approved subject to the terms of this permit and any other orders of the TCEQ:

<b>Permit Action</b>	<b>Application, Revision or Issuance Date</b>	<b>Description of Change</b>
Endorsement	Application dated August 23, 2011	Change company name and mailing address.

These materials are incorporated into this permit by reference as if fully set out herein. Any and all revisions to these elements shall become conditions of this permit upon the date of approval by the Commission.



**Texas Commission on  
Environmental Quality**  
Austin, Texas

**PRODUCTION AREA AUTHORIZATION PAA1**  
under Area Permit No. UR03075  
Goliad Project In Situ Uranium Mine

AUTHORIZATION to operate Class III  
underground injection wells for in situ  
recovery of uranium and aquifer restoration

**I. Name of Permittee:**

- A. Name: Uranium Energy Corp
- B. Address: 100 East Kleberg, Suite 310  
Kingsville, Texas 78363

**II. Name of Mine:** Goliad Project In Situ Uranium Mine

**III. Standard Provisions:**

**A. Mine Plan**

**1. Permit Area and Production Area Maps (Attachments 1A and 1B)**

Attachment 1A shows the general location of PAA1 within the Goliad Project mine permit and lease areas. Attachment 1B provides a more detailed map of PAA1 bounded by the monitor well ring and with locations of baseline/monitoring wells indicated.

**2. Estimated Schedule of Mining and Aquifer Restoration (Attachment 2)**

An update of the estimated schedule of the sequence and timing for mining and aquifer restoration shall be provided with each annual report prepared and submitted pursuant to 30 TAC §305.155 and the area permit UR03075 Provision V.A.2.

CONTINUED on Pages 2 through 12

The permittee is authorized to conduct injection activity in accordance with limitations, requirements, and other conditions set forth herein. This authorization is granted subject to the provisions of Area Permit No. UR03075. This authorization will be in effect for ten years from the date of approval of the area permit, or until revocation of the area permit, or amendment of the authorization. If this authorization is appealed and the permittee does not commence any action authorized by this authorization during judicial review, the term will not begin until judicial review is concluded.

ISSUED DATE: APR 29 2011

A handwritten signature in black ink, reading "Bryan W. Shaw".

For The Commission

B. Monitor Well and Baseline Wells

1. Monitor Well and Baseline Well Locations (Attachment 1B)
2. Designated Monitor Well and Baseline Well Table (Attachment 3)

Routine water quality sampling according to 30 TAC §331.105 and the area permit UR03075 Provision V.G. is required for all designated monitor wells and baseline wells.

C. Baseline Water Quality Table (Attachments 4A-4B)

D. Control Parameter Upper Limits Table (Attachment 5)

If the results of routine sample analysis from a designated monitor well show that the value of any control parameter is equal to or above the values listed in Attachment 5, the operator shall follow all procedures for verification, notification, and remediation according to 30 TAC §§331.105 - 331.106 and the area permit UR03075 Provisions V.E. and V.G.2.

E. Restoration Table (Attachment 6)

As required by 30 TAC §331.107(b) when mining of the production area is completed, the permittee shall notify the Region 14 – Corpus Christi Office and the executive director. After such notification, the permittee shall proceed with reestablishing groundwater quality in the affected permit or production areas in accordance with the requirements of 30 TAC §331.107(a) or obtain an amendment to the Restoration Table according to 30 TAC §331.107(g).

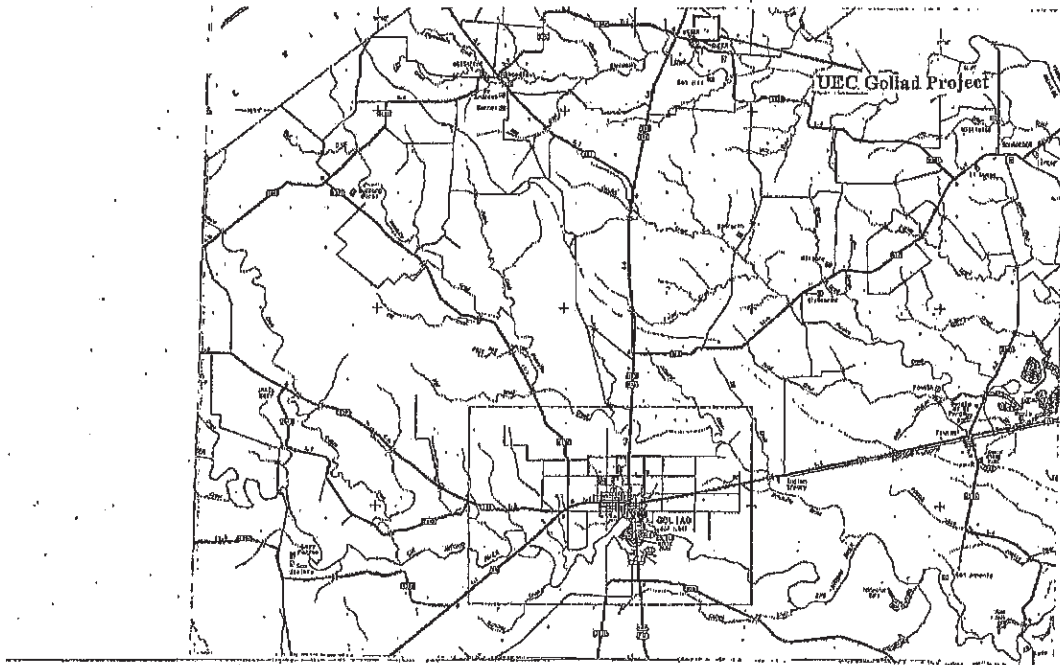
IV. Financial Assurance:

- A. Aquifer Restoration. The cost estimate for financial assurance for aquifer restoration of the production area is \$1,934,742 (2009 dollars). The permittee must review and update the cost estimate as provided in 30 TAC §331.143. The permittee shall establish and maintain, in accordance with the permittee's radioactive materials license authorizing source material recovery, financial assurance that includes sufficient funds in an amount that is no less than the current cost estimate to carry out aquifer restoration of Production Area 1 as required in 30 TAC §336.1125.
- B. Plugging and Abandonment of Wells. The cost estimate for financial assurance for plugging and abandonment of injection wells, production wells, monitor wells, and baseline wells for the production area is \$173,519 (2009) dollars. The permittee must review and update the cost estimate as provided in 30 TAC §331.143. The permittee shall secure and maintain financial assurance for plugging and abandonment in the amount of the plugging and abandonment cost estimate as required under TCEQ Permit No. UR03075, 30 TAC §§331.142-144, and Subchapter Q of 30 TAC Chapter 37. The financial assurance shall be provided to the Texas Commission on Environmental Quality, Attention: Financial Assurance Unit, Mail Code 184, P.O. Box 13087, Austin, TX 78711-3087 (mailing address) or 12100

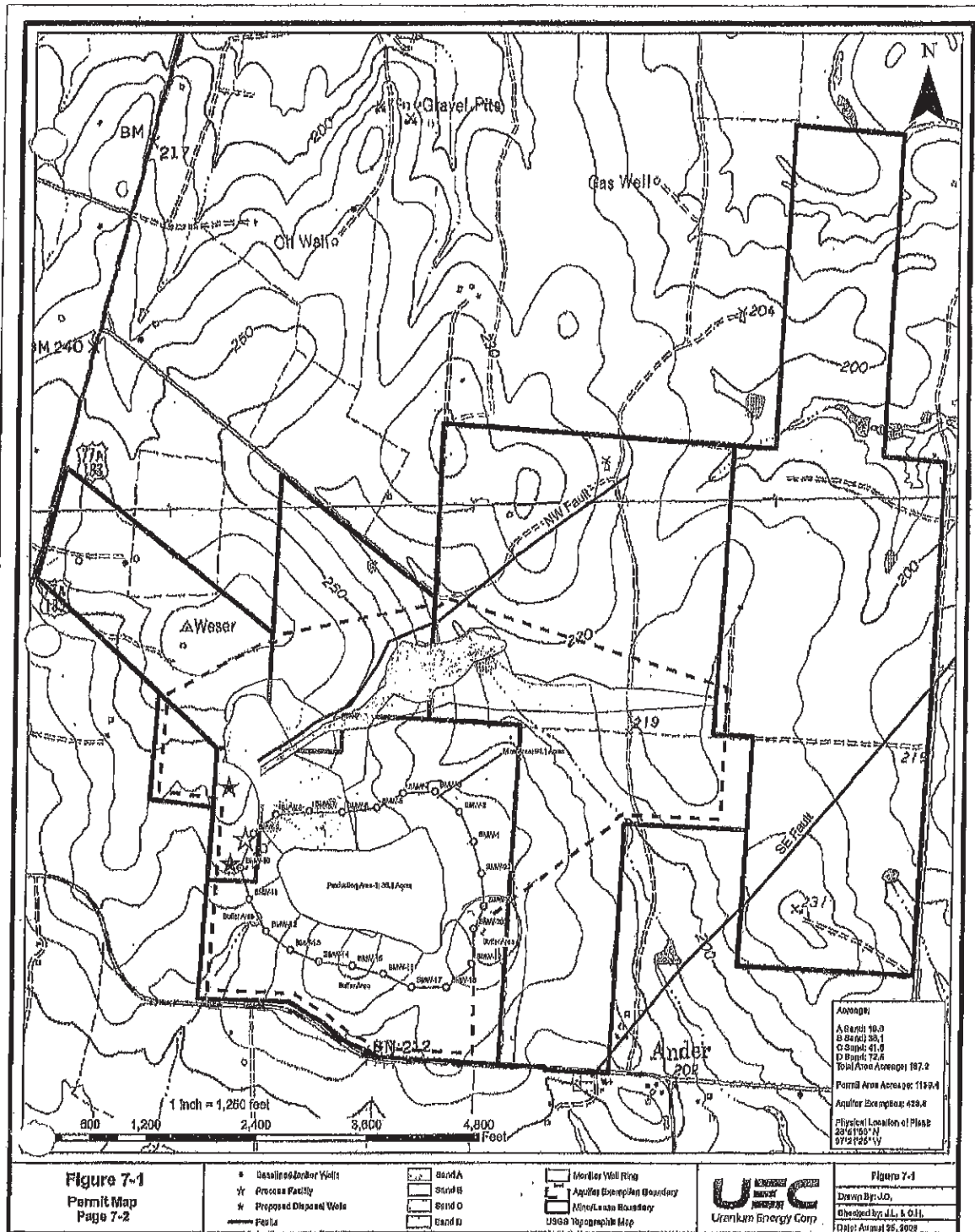


Park 35 Circle, Building A, Austin, TX 78753 (delivery by courier) at least 60 days prior to the commencement of drilling operations. For converted wells and other previously constructed wells, financial assurance must be provided at least 30 days prior to Production Area Authorization issuance and be in effect upon permit issuance.

ATTACHMENT 1A  
PERMIT AREA  
MAP

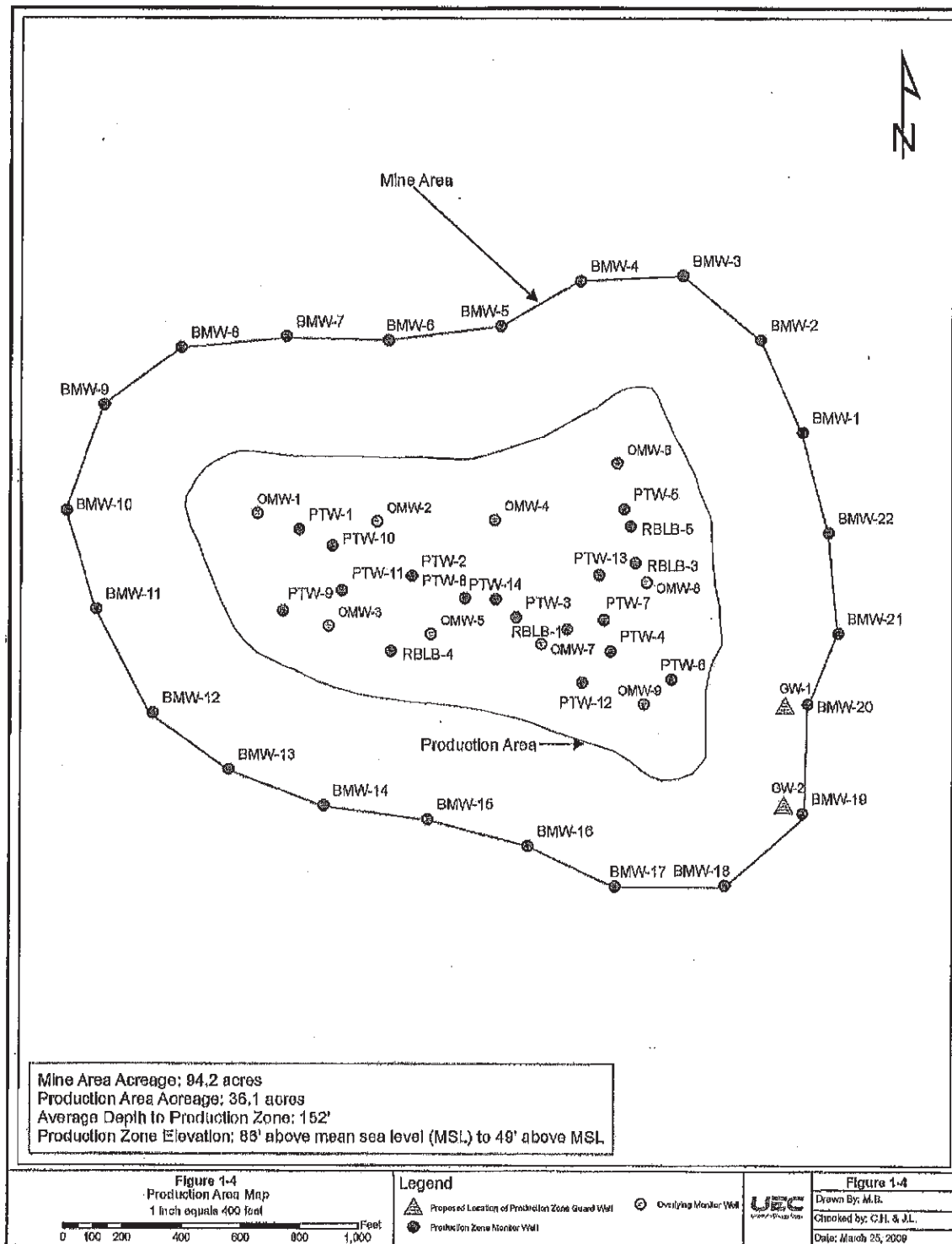


ATTACHMENT 1B  
PRODUCTION AREA MAP (Map 1)





# ATTACHMENT 1B PRODUCTION AREA MAP (Map 2)



ATTACHMENT 2

ESTIMATED SCHEDULE OF MINING AND AQUIFER RESTORATION		
PA1	Production	4 <sup>th</sup> Qtr 2010 through 3 <sup>rd</sup> Qtr 2011
	Aquifer Restoration	4 <sup>th</sup> Qtr 2011 through 4 <sup>th</sup> Qtr 2012
PA2	Production	Middle of 3 <sup>rd</sup> Qtr 2011 through middle 3 <sup>rd</sup> Qtr 2012
	Aquifer Restoration	Middle 3 <sup>rd</sup> Qtr 2012 through 1 <sup>st</sup> Qtr 2014
PA3	Production	2 <sup>nd</sup> Qtr 2012 through middle 3 <sup>rd</sup> Qtr 2013
	Aquifer Restoration	4 <sup>th</sup> Qtr 2013 through middle 1 <sup>st</sup> Qtr 2016
PA4	Production	Middle 3 <sup>rd</sup> 2013 through middle 1 <sup>st</sup> Qtr 2015
	Aquifer Restoration	Middle 1 <sup>st</sup> Qtr 2015 through 3 <sup>rd</sup> Qtr 2017

PA = Production Area

This Mine Plan represents an estimate for the timing for the event listed. The timing of these events is dependent on many factors beyond the control of the permittee including the following:

- 1) timing of the approval of the permits required to mine the various ore bodies;
- 2) the ore bodies response to the lixiviant used for recovery;
- 3) the ultimate economic recovery of uranium from each ore body;
- 4) the sequence of mining the various ore bodies; and
- 5) the response of each ore body to the restoration techniques employed.

**ATTACHMENT 3  
 DESIGNATED MONITOR WELL AND BASELINE WELL TABLE**

<b>Production Zone</b> (monitor well ring)	<b>Monitor Wells</b>				<b>Production Area Baseline Wells</b> (production zone)
	<b>Sand A</b> 1 <sup>st</sup> Overlying Aquifer	<b>[name] Sand</b> 2 <sup>nd</sup> Overlying Aquifer	<b>[name] Sand</b> 3 <sup>rd</sup> Overlying Aquifer	<b>[name] Sand</b> 4 <sup>th</sup> Overlying Aquifer	
BMW-1	OMW-1	NA	NA	NA	PTW-1
BMW-2	OMW-2				PTW-2
BMW-3	OMW-3				PTW-3
BMW-4	OMW-4				PTW-4
BMW-5	OMW-5				PTW-5
BMW-6	OMW-6				PTW-6
BMW-7	OMW-7				PTW-7
BMW-8	OMW-8				PTW-8
BMW-9	OMW-9				PTW-9
BMW-10					PTW-10
BMW-11					PTW-11
BMW-12					PTW-12
BMW-13					PTW-13
BMW-14					PTW-14
BMW-15					RBLB-1
BMW-16					RBLB-3
BMW-17					RBLB-4
BMW-18					RBLB-5
BMW-19					
BMW-20					
BMW-21					
BMW-22					
GW-1					
GW-2					



**ATTACHMENT 4A**  
**BASELINE WATER QUALITY TABLE**  
**GOLIAD PROJECT SAND B PRODUCTION ZONE**

PRODUCTION ZONE									WELL ID BY AREA*	
Parameter	Units	Mine Area**			Production Area				Production Zone	
			Low	Ave.	High	Low	Ave.	High	Mine	Prod.
1	Calcium	mg/l	82	97	110	81	96	110	BMW-1	PTW-1
2	Magnesium	mg/l	14.5	17.7	21.2	10.9	17.8	20.3	BMW-2	PTW-2
3	Sodium	mg/l	83	102	120	82	97	117	BMW-3	PTW-3
4	Potassium	mg/l	2.92	4.31	7.81	2.5	6.4	16.5	BMW-4	PTW-4
5	Carbonate	mg/l	0	0	0	0	0	3	BMW-5	PTW-5
6	Bicarbonate	mg/l	268	311	350	251	308	368	BMW-6	PTW-6
7	Sulfate	mg/l	0	50	89	1.5	43.2	82	BMW-7	PTW-7
8	Chloride	mg/l	147	164	185	150	164	180	BMW-8	PTW-8
9	Fluoride	mg/l	<0.5	0.57	0.71	<0.50	0.58	0.80	BMW-9	PTW-9
10	Nitrate-N	mg/l	<0.01	#	0.05	<0.01	0.14	1.73	BMW-10	PTW-10
11	Silica	mg/l	12.3	26.2	34.9	<0.05	29.8	37.5	BMW-11	PTW-11
12	pH	std. units	6.97	7.40	8.18	7.18	7.48	7.96	BMW-12	PTW-12
13	TDS	mg/l	260	595	810	390	586	698	BMW-13	PTW-13
14	Conductivity	µmho/cm	953	1082	1140	950	1084	1190	BMW-14	PTW-14
15	Alkalinity	mg/l	224	256	287	206	253	302	BMW-15	RBLB-1
16	Ammonia-N	mg/l	<0.1	0.12	0.34	<0.05	#	0.3	BMW-16	RBLB-3
17	Arsenic	mg/l	<2E-3	0.009	0.069	<0.01	0.011	0.030	BMW-17	RBLB-4
18	Cadmium	mg/l	<1E-3	##	##	<0.001	<0.007	<0.01	BMW-18	RBLB-5
19	Iron	mg/l	<3E-2	0.095	0.776	<0.01	0.067	0.322	BMW-19	
20	Lead	mg/l	<2E-3	##	##	<0.002	#	0.004	BMW-20	
21	Manganese	mg/l	<0.01	0.013	0.050	<0.010	0.027	0.026	BMW-21	
22	Mercury	mg/l	<1E-4	##	##	<0.0001	##	##	BMW-22	
23	Molybdenum	mg/l	<0.01	0.032	0.481	<0.01	0.185	0.136		
24	Selenium	mg/l	<3E-3	6E-3	6E-3	<0.003	+	0.002		
25	Uranium	mg/l	<1E-3	0.009	0.188	<0.003	0.50	0.804		
26	Radium-226	pCi/l	0.1	13.7	48	10.0	385.1	2000.0		

\*List the identification numbers of wells used to obtain the high and low values for each parameter

\*\*Monitor Wells

# Only one value quantified; different detection limits for each of 3 sampling rounds.

##No quantified values

+Only 4 quantified values; different detection limits for each of 3 sampling rounds

**ATTACHMENT 4B  
BASELINE WATER QUALITY TABLE  
GOLIAD PROJECT SAND A NONPRODUCTION ZONE**

	Parameter	Units	Non-Production Zone			Well ID for Non-Production Zone
			Low	Ave.	High	
1	Calcium	mg/l	101	181	310	OMW-1
2	Magnesium	mg/l	9.2	21.2	40.5	OMW-2
3	Sodium	mg/l	83	105	133	OMW-3
4	Potassium	mg/l	0	1.7	4.4	OMW-4
5	Carbonate	mg/l	0	0	0	OMW-5
6	Bicarbonate	mg/l	246	315	370	OMW-6
7	Sulfate	mg/l	36	103	181	OMW-7
8	Chloride	mg/l	122	264	648	OMW-8
9	Fluoride	mg/l	0.32	0.46	0.63	OMW-9
10	Nitrate-N	mg/l	1.90	6.16	10.5	
11	Silica	mg/l	16.1	33.8	51.2	
12	pH	std. units	6.70	7.14	7.44	
13	TDS	mg/l	403	923	2350	
14	Conductivity	µmhos	1040	1549	2520	
15	Alkalinity	mg/l	202	258	303	
16	Ammonia-N	mg/l	<0.1	0.13	0.47	
17	Arsenic	mg/l	<0.01	0.013	0.031	
18	Cadmium	mg/l	<1E-3	#	#	# No quantified values.
19	Iron	mg/l	<3E-2	0.085	0.890	
20	Lead	mg/l	<2E-3	##	3E-3	##Only two quantified values; different detection limits for 3 sampling rounds.
21	Manganese	mg/l	<3E-3	0.026	0.09	
22	Mercury	mg/l	<1E-4	#	#	
23	Molybdenum	mg/l	<1E-2	##	0.024	
24	Selenium	mg/l	<3E-3	0.011	0.013	
25	Uranium	mg/l	<3E-3	0.01	0.016	
26	Radium-226	pCi/l	0.2	1.4	6	

**ATTACHMENT 5**  
**CONTROL PARAMETER UPPER LIMITS TABLE**

<b>Production Zone</b>	
<b>Control Parameter</b>	<b>Sand B</b>
Chloride, mg/l	231
Conductivity, umhos/cm	1,425

<b>Non-Production Zone</b>	
<b>Control Parameter</b>	<b>Sand A 1<sup>st</sup> Overlying Aquifer</b>
Chloride, mg/l	810
Conductivity, umhos/cm	3,150



ATTACHMENT 6  
RESTORATION TABLE

<u>Parameter</u>	<u>Unit</u>	<u>Concentration</u>
Calcium	mg/l	96
Magnesium	mg/l	17.8
Sodium	mg/l	97
Potassium	mg/l	6.4
Carbonate	mg/l	0.0
Bicarbonate	mg/l	308
Sulfate	mg/l	43.2
Chloride	mg/l	164
Nitrate-N	mg/l	0.14
Fluoride	mg/l	0.58
Silica	mg/l	29.8
TDS	mg/l	587
Conductivity	µmhos/cm	1084
Alkalinity	mg/l as CaCO <sub>3</sub>	253
pH	Std. Units	7.18 to 7.96
Arsenic	mg/l	0.010
Iron	mg/l	0.68
Manganese	mg/l	0.027
Molybdenum	mg/l	0.185
Selenium	mg/l	0.007
Uranium	mg/l	0.050
Radium <sup>226</sup>	pCi/l	391



**Texas Commission on  
Environmental Quality**  
Austin, Texas

AREA PERMIT NO. UR03075  
Goliad Project In Situ Uranium Mine

AREA PERMIT to construct and operate  
Class III underground injection wells for  
in situ recovery of uranium and groundwater  
restoration under Chapter 27 Texas Water Code

- I. Permittee: Uranium Energy Corp (UEC)  
100 East Kleberg, Suite 310  
Kingsville, TX 78363
- II. Type of Permit: Initial   X   Amended        Renewal
- III. Nature of Business: In Situ Uranium Mining
- IV. General Description and Location of Injection Activity

The Goliad Project In Situ Uranium Mine (as shown in Attachment 1) is approximately 13 miles north of the city of Goliad, about 0.9 miles east of the intersection of State Highway 183 and Farm-to-Market Road 1961, in Goliad County. The permit area (as shown in Attachment 2A) for this site is a total of 1139.4 acres as documented in the metes and bounds description (Attachment 3). The production zones are in sands of the Pliocene Goliad Formation. These sands, designated "A", "B", "C", and "D" from shallowest to deepest, range in depth from 45 to 304 feet below land surface.

CONTINUED on Pages 2 through 13

The permittee is authorized to conduct injection activity in accordance with limitations, requirements, and other conditions set forth herein. This permit is granted subject to the rules and orders of the commission, and the laws of the State of Texas. The permit will be in effect for ten years from the date of approval or until amended or revoked by the commission. If this permit is appealed and the permittee does not commence any action authorized by this permit during judicial review, the term will not begin until judicial review is concluded.

ISSUED DATE: APR 29 2011

A handwritten signature in black ink, reading "Bryan U. Shaw".  
For The Commission

V. Standard Provisions

A. Production Area Authorization

1. Mining in a production area within the permit area (Attachment 2A) requires a production area authorization (PAA) from the Texas Commission on Environmental Quality (TCEQ). Mining shall not begin until the production area authorization is obtained.
2. Each PAA shall include an updated Mine Plan (as provided in Attachments 2A and 2B), and be in accordance with 30 TAC §305.155.

B. Mechanical Integrity

1. In compliance with 30 TAC §331.43(d), 30 TAC §331.82, 30 TAC §331.85, and as specified in the application, proof of mechanical integrity for all Class III wells shall be demonstrated by well completion (cementing) records and by a pressure test. Information required to demonstrate mechanical integrity shall be reported to the executive director before injection of mining solution.
2. A pressure test shall also be conducted each time a tool that could affect mechanical integrity is run into the well in accordance with 30 TAC §331.82(c)(2).

C. Operating Requirements

1. Mining solutions shall be confined to the production zone within the area of designated production zone monitor wells in accordance with 30 TAC §331.102. This shall be accomplished in each production area by a rate of withdrawal of water that exceeds the rate of injection of water.
2. Monitor wells shall be positioned to provide horizontal and vertical surveillance of groundwater quality to monitor confinement of the mining solutions in accordance with 30 TAC §§331.82(g) and 331.103.
3. Before making any modification in the composition of the mining solutions from that described in the application incorporated by Provision VIII.B., the permittee shall provide adequate descriptive information and obtain authorization by permit amendment or modification.
4. The fluid used for uranium mining shall consist of native groundwater supplemented with bicarbonate ions, sodium hydroxide, and oxygen or hydrogen peroxide.
5. Discharge of fluids into the surface waters of the State is not authorized by this permit.



D. Wellhead Pressure

1. Pressure gauges shall be installed, easily readable, and maintained in working condition on all injection wells or on the injection manifold with the maximum allowable injection pressure clearly marked on each gauge.
2. Wellhead pressures shall be limited to minimize the possibility of leakage from the production zone into the non-production zones. Injection pressures shall not exceed 0.40 psi per foot of well depth or the internal yield pressure of the casing.

E. Monitoring Parameter Upper Limits

1. Chloride, conductivity, and total dissolved solids shall be used as control parameters in monitoring for excursions of mining solutions from each production area. Upper limit concentrations that indicate the presence of an excursion shall be calculated for the production zone by adding 25% to the maximum values determined in the sampling of the production zone wells for each production area.
2. In the event of an excursion, as defined in provision V.G.2. of this permit and in 30 TAC §331.2, monitoring for uranium and radium<sup>226</sup> shall be required. Sampling and analysis for uranium and radium<sup>226</sup> shall be in accordance with provision V.G.2. of this permit.

F. Sampling, Preservation, Analysis and Quality Control

1. To obtain a valid sample, during completion each sample well shall be pumped until the water is free of mud and foreign material and until conductivity and pH are reasonably constant. As samples are taken during baseline, routine, and restoration sampling, the sampling method, as described in the application or subsequent amendments, shall assure that the water sampled is formation water. Excess water pumped from the production wells or monitor wells containing mining solutions shall not be discharged into the surface waters of the State.
2.
  - a. Sample preservation, analysis and analytical quality control shall be as defined in the most recent issue of Methods for Chemical Analysis of Water and Wastes (EPA - Technology Transfer). Total Dissolved Solids shall be determined by evaporation at 180°C. All data submitted to the TCEQ shall be in a manner consistent with the latest version of the "Quality Assurance Project Plan for Environmental Monitoring and Measurement Activities Relating to the Resource Conservation Recovery Act and Underground Injection Control" (TCEQ QAPP), which applies to oversight responsibilities of all regulated entities conducting environmental activities.
  - b. Any other method not specified in the referenced EPA document shall be approved by the executive director.

3. The permittee shall notify the Field Operations Division MC 174, P. O. Box 13087, Austin, TX 78711-3087 of intent to collect samples for baseline and final closing of each PAA at least two weeks before sample collection to allow the staff an opportunity to split samples for confirming analysis.

G. Monitoring and Reporting Requirements

1. Routine Mining Operations

- a. Water samples shall be taken at least twice each month at two-week intervals from all monitor wells for production areas in which mining solutions have been introduced, and shall be analyzed for the control parameters identified in Section V.F. of this permit and 30 TAC §331.105(1) and (2). This monitoring program shall be continued for each subject production area until the Field Operations Division, Region 14 – Corpus Christi Office, 6300 Ocean Dr., Unit 5839, Corpus Christi, TX 78412-5839 and Industrial and Hazardous Waste Permits Section, MC 130, P. O. Box 13087, Austin, TX 78711-3087 are officially notified that restoration has commenced.
- b. As required by 30 TAC §331.85(e), routine monitoring data shall be reported at least quarterly to the Field Operations Division, MC 174, P. O. Box 13087, Austin, TX 78711-3087 on a form provided by the executive director, in accordance with the form completion instructions and postmarked no later than the 10<sup>th</sup> day of the following reporting period.
- c. The permittee shall retain in an organized fashion and furnish to the TCEQ's representative, upon request, records of all monitoring information, copies of all reports and records required by this permit, for a period of at least 3 years from the date of the sample, measurement, report, record, certification, or application.
- d. In addition to the recordkeeping and reporting requirements specified elsewhere in this permit, the permittee shall maintain at the permitted mining site all data from monitoring and testing, inspections, and other records required by the provisions of 30 TAC Chapters 305 and 331 and the permit. These records will be made available to representatives of the TCEQ upon request.
- e. The permittee shall keep records throughout the term of the permit of data used to complete the final application, any supplemental information, and a copy of the issued area permit and PAAs. All copies of any renewals, amendments, revisions, and modifications must also be kept at the facility such that the most current documents are available for inspection at all times.



- f. All materials, including any related information submitted to complete the application shall be retained, not just those materials which have been incorporated into the permit as required by 30 TAC §305.47.

2. Excursions

- a. An excursion (defined by 30 TAC § 331.2 as the movement of mining solutions into a designated monitor well) is indicated by the sampled concentration of any control parameter provided in Section V.E.1. of this permit being equal to or above the upper limit established for the applicable PAA. Within two days of detecting an apparent excursion, the permittee shall repeat the sampling and complete a verifying analysis of the samples taken from each apparently affected well in accordance with 30 TAC §331.105(3).
- b. If the verifying analysis confirms the existence of an excursion, the permittee shall notify the Field Operations Division, Region 14 – Corpus Christi Office, by the next working day by telephone and by letter postmarked within 48 hours of identification of the excursion. The notification must identify the affected monitor well and the control parameter concentrations.
- c. While mining solutions are present in a designated monitor well, the permittee shall conduct sampling and analysis of each affected well at a frequency of at least two times per week in accordance with 30 TAC §331.105(4).
- d. Reporting shall be monthly according to 30 TAC §331.85(f) (by the second day after each sample is taken). Parameters analyzed and reported during periods of excursions shall consist of the control parameters specified in Provision V.E.1 of this permit plus uranium and radium<sup>226</sup> as specified in Provision V.E.2. of this permit.

3. Restoration

- a. The executive director shall be notified when routine mining operations have ceased within a given production area and the permittee shall commence groundwater restoration according to 30 TAC §331.107(b).
- b. As specified in §331.105(2), regular monitoring shall be continued until the executive director has been officially notified that restoration has commenced. Sampling of monitor and baseline wells for the production area during restoration shall occur at least quarterly, and shall be analyzed for certain parameters provided in the Restoration Table for the applicable production area.

- c. Beginning six months after the date of initiation of restoration of a production area, the permittee shall provide to the Field Operations Division MC 174, P. O. Box 13087, Austin, TX 78711-3087 semi-annual restoration progress reports until restoration is accomplished for the production area.

4. Stability Sampling

- a. Upon performing groundwater restoration as required by 30 TAC §331.107(b) or as provided by §331.107(f), the permittee shall conduct stability sampling for the parameters listed in the Restoration Table from all production area baseline wells as required by 30 TAC §331.107(e).
- b. A minimum of three sample sets, taken at a minimum of 30-day intervals, shall be reported to the executive director over a period of one calendar year between cessation of restoration operations and the final set of stability samples in accordance with §331.107.
- c. Stability sampling shall comply with the requirements provided by 30 TAC §331.107(f), in the event the restoration table is amended.

5. Annual Report

By December 31<sup>st</sup> of each year, the permittee shall submit to the Industrial and Hazardous Waste Permits Section, MC 130, P. O. Box 13087, Austin, TX 78711-3087 an annual report. The annual report shall include:

- a. For injection wells, production wells, baseline wells, and monitor wells authorized under the Class III area permit and production area authorizations, the number and identity of wells plugged and wells constructed during the report period, and the total number of unplugged wells at the time of reporting;
- b. A revised calculation of plugging cost for unplugged wells as specified in subsection V.H.5.a. of this permit;
- c. An updated map and tabulation of newly constructed or newly discovered artificial penetrations of the subsurface within the area of review, and for such penetrations, assessment of need for corrective action under 30 TAC §331.44; and
- d. An updated mine plan showing the estimated schedule of the sequence and timing for mining and aquifer restoration in each production area authorization.



#### H. Plugging and Abandonment

1. All of the wells in each PAA associated with this permit, including baseline wells, monitor wells, and injection/production wells, shall be plugged in accordance with 30 TAC § 331.46 within 120 days of completion of final restoration of the each PAA unless revisions of the time requirements are approved by the executive director under 30 TAC §331.86(a).
2. The permittee shall notify the executive director in writing at least two weeks before commencing plugging and abandonment.
3. Plugging and abandonment shall be accomplished according to the plans and specifications submitted in the application identified in Provision VIII.B and as modified by Provision V.H.5. Any revised, updated, or additional plugging and abandonment plans shall be approved by the executive director through the permit amendment or modification process.
4. Within 30 days after completion of well closure (plugging), a closure report shall be filed with the Industrial & Hazardous Waste Permits Section, MC 130, P. O. Box 13087, Austin, TX 78711-3087 in accordance with §331.46(m).
5. The wells shall be plugged and abandoned in accordance with the requirements of 30 TAC TAC §331.86 and with the following requirements:
  - a. Removal of all equipment from the well;
  - b. Cementing the wellbore from total depth to the surface with a cement slurry with a weight of no less than 9.5 lbs/gallon;
  - c. Cutting and removal of the casing from a depth of 3 feet to the surface; and
  - d. Backfilling the hole with native soil, graded to approximately the natural contour of the land.
6. All production and injection wells that remain unplugged for use in restoration activities shall be temporarily capped in a manner to preclude the introduction of any material from the surface into the borehole.

#### VI. Radioactive Materials License

The permittee shall have a valid license(s) from the TCEQ covering the handling and processing of radioactive materials for this facility, prior to mining for the recovery of uranium. The primary and supporting production/processing facilities, along with supplies and materials used by or resulting from these facilities, are to be installed, operated, maintained and handled in accordance with the plans, specifications, and descriptions submitted as part of the application for commission licensing in order to prevent spills, discharges, or dispersion of any materials, directly or indirectly, to surface or ground waters.

#### VII. Financial Assurance

- A. The permittee shall secure and maintain in full force and effect at all times an acceptable financial assurance mechanism, following 30 TAC §§ 331.141 - 331.144, to provide for plugging and abandonment of the permitted Class III wells, baseline wells, and monitoring wells.
- B. The amount of financial assurance shall be updated annually for all production areas (PAs) to provide for adequate plugging and to reflect changes in the costs of materials and labor.
- C. This permit does not authorize underground injection of fluid unless the permittee has in effect an acceptable financial assurance mechanism as described above. Financial assurance shall be submitted at least 60 days prior to commencement of drilling operations in each PA and be effective before drilling begins in accordance with 30 TAC §37.7021(c).
- D. To obtain release of financial assurance, a professional engineer or professional geologist licensed in Texas shall certify that plugging and abandonment has been accomplished in accordance with the permittee's plugging and abandonment plan in accordance with 30 TAC §331.144.

#### VIII. Additional Provisions

- A. The following rules are incorporated as terms and conditions of this permit by reference:
  - 1. Financial Assurance of Underground Injection Control Wells  
30 TAC Chapter 37 Subchapter Q;
  - 2. Consolidated Permits  
30 TAC Chapter 305 Subchapters A, C, F, and H; and
  - 3. Underground Injection Control  
30 TAC Chapter 331 Subchapters A, C, E, F, G, and I.
- B. This permit is based on, and the permittee shall follow the plans and specifications contained in the Class III Underground Injection Control Application dated July 27, 2007 and revised October 2, 2007, December 7, 2007, January 30, 2008, February 19, 2008, March 19, 2008, and April 3, 2008, which is hereby approved subject to the terms of this permit and any other



orders of the TCEQ. These materials are incorporated into this permit by reference as if fully set out herein. Any and all revisions to these elements shall become conditions of this permit upon the date of approval by the commission.

- C. Acceptance of this permit by the permittee constitutes an acknowledgment and agreement that the permittee will comply with all the terms and conditions embodied in the permit, and the rules and other orders of the commission in accordance with 30 TAC §305.124.
- D. This permit is subject to further orders and rules of the commission. In accordance with the procedures for amendments and orders, the commission may incorporate into permits already granted, any condition, restriction, limitation, or provision reasonably necessary for the administration and enforcement of Texas Water Code Chapters 27. Additionally, the permittee has a duty to comply with the following permit conditions:
  - 1. **Modification of Permitted Wells, Operational Methods, and Related Specifications**

The wells and operational methods authorized are limited to those described herein and by the application submittals. All wells and operational methods are subject to the terms and conditions of this permit and TCEQ rules. Prior to constructing or operating any wells in a manner which differs from either the related plans and specifications contained in the permit application or the limitations, terms, or conditions of this permit, the permittee must comply with the TCEQ permit amendment or modification rules as provided in 30 TAC §§305.62 and 305.72, respectively.
  - 2. **Definitions**

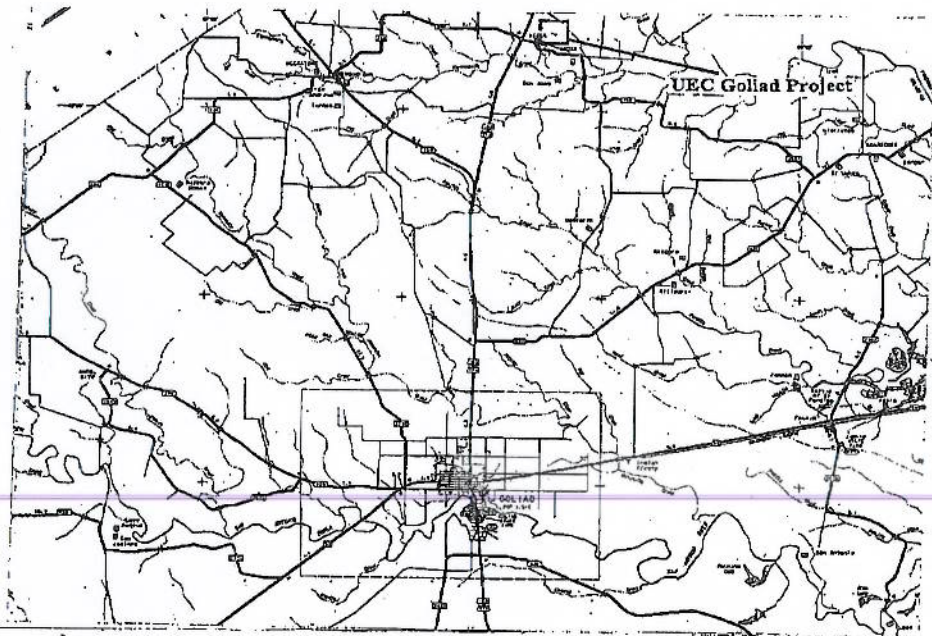
For purposes of this permit, terms used herein shall have the same meaning as those in 30 TAC Chapters 37, 305, and 331 unless this permit specifically provides otherwise; where terms are not defined in the regulations or the permit, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.
  - 3. **Permit Expiration**

In order to continue a permitted activity after the expiration date of the permit the permittee shall submit an application for permit renewal at least 180 days before the expiration date of the effective permit, unless permission for a later date has been granted by the executive director in accordance with 30 TAC §305.65. Authorization to continue such activity will terminate upon the effective denial of said application.
- E. This permit does not convey any property rights of any sort, nor any exclusive privilege, and does not become a vested right in the permittee in accordance with 30 TAC §§305.122(b) and 305.125(a)(16).

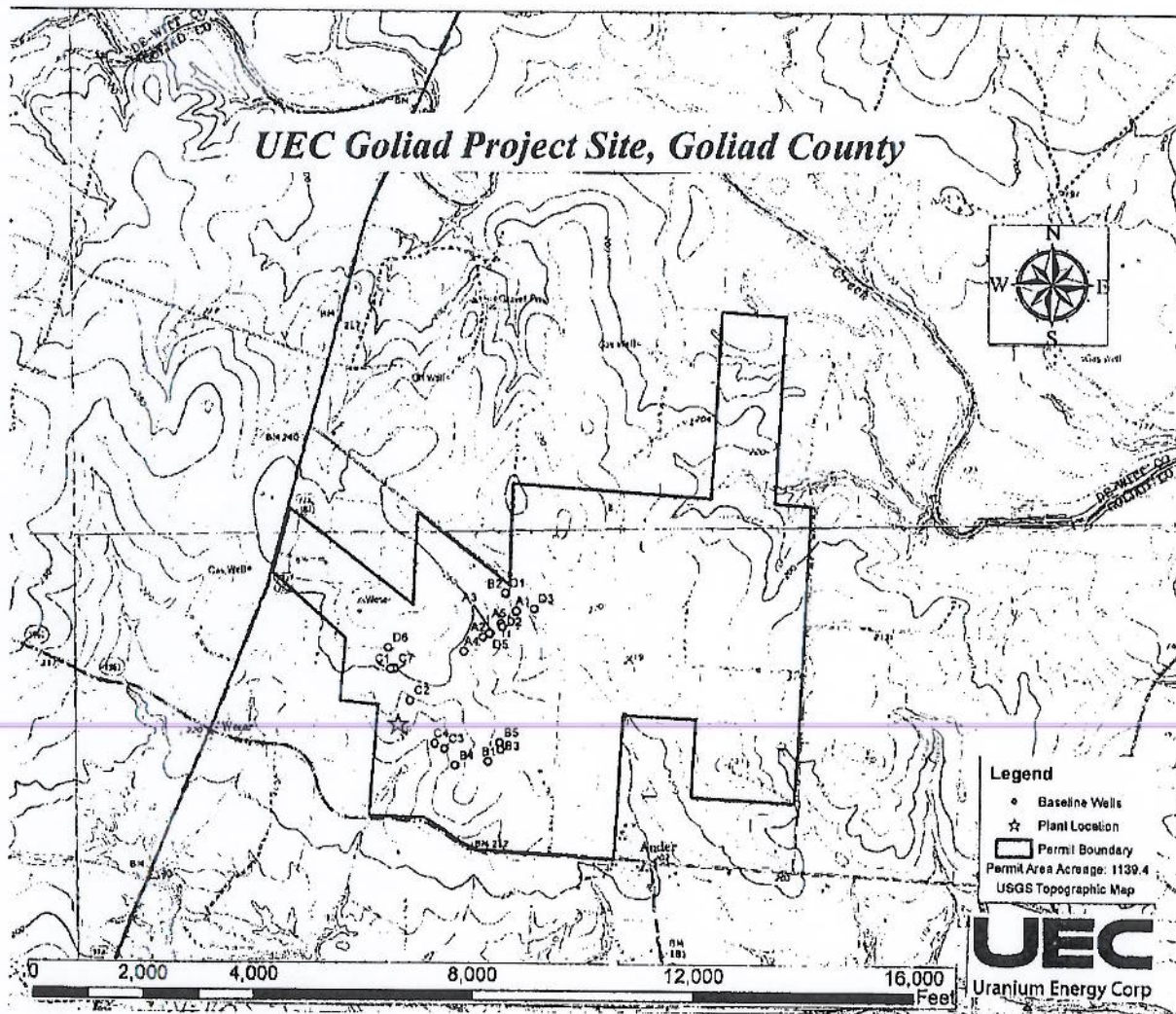


- F. The issuance of this permit does not authorize any injury to persons or property or an invasion of other property rights, or any infringement of state or local law or regulations in accordance with 30 TAC §305.122(c).
- G. In the event of conflict between the application, permit, rules, and statutory requirements the most stringent requirement shall apply in accordance with 30 TAC §305.154(a).

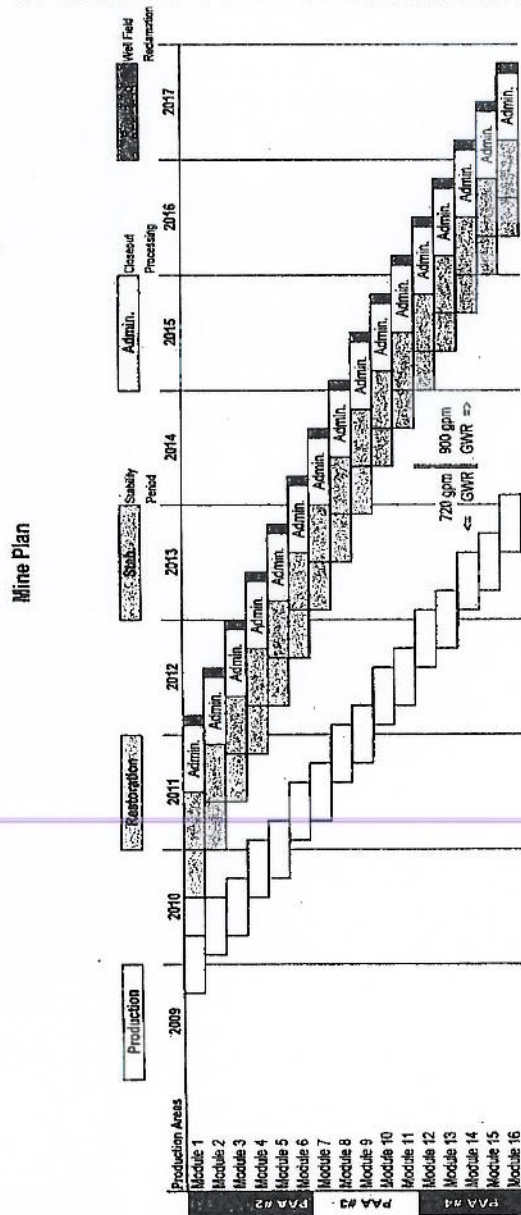
**ATTACHMENT 1  
PERMIT AREA MAP**



ATTACHMENT 2A  
MINE PLAN: MINE AREA MAP



# **ATTACHMENT 2B** **MINE PLAN: ESTIMATED SCHEDULE FOR MINING AND RESTORATION**





### ATTACHMENT 3 METES AND BOUNDS DESCRIPTION OF THE GOLIAD PROJECT PERMIT AREA

